UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,722	08/08/2006	Naohiro Yoshida	129018	1980

25944 7590 02/23/2010

OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER	
SCULLY, STEVEN M	
ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
02/23/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com
jarmstrong@oliff.com

Office Action Summary	Application No.	Applicant(s)	
	10/588,722	YOSHIDA, NAOHIRO	
	Examiner	Art Unit	
	Steven Scully	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 September 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 7-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 7-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FUEL CELL SYSTEM AND METHOD FOR CONTROLLING THE SAME

Examiner: Scully S.N.: 10/588,722 Art Unit: 1795 January 29, 2010

DETAILED ACTION

1. The Amendment filed September 9, 2009 has been entered. Claims 1-3, 9 and 12 have been amended. Accordingly, claims 1-3 and 7-13 are pending in the application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Terminal Disclaimer

3. The terminal disclaimer filed on September 9, 2009 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of 10/585,761 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 112

4. Claims 9 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claims 9 and 12, the instant Specification does not teach how the pressure-regulating means would be capable of controlling the pressure of the oxidation gas supplied to the pressure-regulating means independently from the pressure of the oxidize gas in the cathode side. Referring to In re Wands, 8 USPQ2d 1400 (Fed Cir 1988) "The Wands Factors", the amount of direction or guidance presented is lacking; also, there is an absence of working examples to show how this would be able to be accomplished by one of ordinary skill in the art. In particular, the claim requires "controlling a pressure of the oxidation gas supplied to an outlet side of the pressure-regulating means independently from the pressure of the oxidize gas in the cathode side," which is not provided with enablement. As SV8 and SV9 are opened and closed, the pressure is thus modified in order to adjust the pressure of the fuel. However, in doing so, the pressure of the oxidize gas in the cathode side of the fuel cell would necessarily increase or decrease (thus these are not independent). Therefore the specification does not enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

5. Claims 9 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed,

had possession of the claimed invention. The specification does not provide support for "the pressure-regulating means independently from *the pressure of* the oxidize gas in the cathode side,..." of claims 9 and 12 at lines 4-5. It is believed that there is support for the pressure-regulating means instead being independent from the inlet oxidize gas because the inlet and the pressure-regulating stream split after the compressor (22). Appropriate correction is required.

6. Claim 9 and 12 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, are withdrawn in light of the Amendment.

Claim Rejections - 35 USC § 102

7. Claim rejections of 1-3, 8, 10, 11 and 13 rejected under 35 U.S.C. 102(b) as being anticipated by Kazuo (JP 2002-352837, see machine translation) are withdrawn in light of the Amendment.

Claim Rejections - 35 USC § 103

8. Claims 1-3, 8, 10, 11 and 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuo (JP2002-352837).

Regarding claim 1, Kazuo teaches a fuel cell system (Fig 8), comprising: a fuel gas supply line (Fig 8, L1)that supplies fuel gas from a fuel gas supply source (2) to the fuel cell (1) ([0037], [0103]); pressure-regulating means (31) provided on the fuel gas

supply line (L1) and for regulating a pressure of the fuel gas supplied from the fuel gas supply source (2) ([0103]); a circulation route (L2) that returns the fuel gas discharged from the fuel cell (1) to the fuel gas supply line (L1) ([0107]), and a fuel gas pump (4) for circulating the fuel gas in the circulation route (L2) ([0004], [0041]), wherein the circulation route (L2) is connected to the fuel gas supply line (L1) such that the fuel gas is returned to the fuel gas supply line in upstream of the pressure-regulating means (31) ([0103]). Kazuo does not explicitly disclose the controller controls the fuel gas pump. However, it is well known to control system components for overall efficiency and thus it would have been obvious to one of ordinary skill in the art at the time of the invention to control the pump so that the system may be effectively controlled.

Regarding claim 2, Kazuo discloses all the claim limitations as set forth above and also discloses the fuel cell system, wherein the pressure-regulating means (31) is configured so as to regulate the pressure of the fuel gas in the fuel gas supply line by using a pressure of oxidation gas supplied to the fuel cell ([0084]), the fuel cell system further comprising: an oxidation gas supply line (L3) for supplying the oxidation gas supplied to a cathode (18) of the fuel cell (1) ([0037]); oxidation gas supply means (12) provided in the oxidation gas supply line (L3) and for pressurizing and supplying the oxidation gas to the cathode (1b) ([0043]); cathode side pressure detection means for detecting the pressure of the oxidation gas supplied to the cathode of the fuel cell ([0084]); anode side pressure detection means (32) for detecting the pressure of the fuel gas supplied to an anode (1a) of the fuel cell (1) ([0103]); and control means (21) for controlling the pressure of gas supplied to the fuel cell from at

least either the fuel gas supply line and the oxidation gas supply line, so that the differential pressure between the oxidation gas detected by the cathode side pressure detection means and the fuel gas detected by the anode side pressure detection means becomes within a predetermined range ([0084]).

Regarding claim 3, Kazuo discloses all the claim limitations as set forth above and also discloses the fuel cell system, wherein the control means (21) controls at least either one of the oxidation gas supply means or the pressure-regulating means so that the differential pressure becomes within the predetermined range ([0084]).

Regarding claim 8, Kazuo discloses all the claim limitations as set forth above and also discloses the fuel cell system, wherein the anode side pressure detection means (32) estimates and detects the pressure of the fuel gas on the basis of a drive amount of the fuel gas pump ([0020], [0030]).

Regarding claim 10, Kazuo discloses all the claim limitations as set forth above and also discloses the fuel cell system, wherein when the pressure of the fuel gas is larger than the pressure of the oxidation gas, and the differential pressure therebetween is outside the predetermined range, the oxidation gas supply means (12) pressurizes the oxidation gas supplied to the cathode side (1b) to reduce the differential pressure ([0057], [0084]).

Regarding claim 11, Kazuo discloses all the claim limitations as set forth above and also discloses the fuel cell system, further comprising purge means (15,16) for purging the fuel gas in the circulation route (L2), wherein when the pressure of the fuel

gas is larger than the pressure of the oxidation gas, and the differential pressure therebetween is outside the predetermined range, the purge means (15,16) depressurizes the fuel gas in the anode side (1a) to reduce the differential pressure ([0048], [0053]).

Regarding claim 13, Kazuo discloses all the claim limitations as set forth above and also discloses the fuel cell system, wherein when the pressure of the oxidation gas is larger than the pressure of the fuel gas, and the differential pressure therebetween is outside the predetermined range, the oxidation gas supplied to the cathode side (1b) is depressurized by the oxidation gas supply means (12) so that the differential pressure is reduced ([0057], [0084]).

9. Claims 7 and 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuo (JP 2002-352837, see machine translation) as applied to claims 1-3, 8, 10, 11 and 13 above, and further in view of Morishima et al. (DE 10331261, see English-language equivalent US 7,205,243).

Regarding claim 7, Kazuo discloses all the claim limitations as set forth above, but Kazuo does not expressly disclose wherein the cathode side pressure detection means estimates and detects the pressure of the oxidation gas on the basis of a drive amount of the oxidation gas supply means.

However, Morishima does teach a similar fuel cell system wherein the control unit estimates a gas pressure using a drive amount of said gas pump instead of

measuring the pressure of said gas directly (col 8, ln 62-67 'may use a flow rate... as measured').

Kazuo and Morishima are combinable because they are concerned with the same field of endeavor, namely fuel cell systems and methods for fluid circulation therewithin.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add Morishima's teaching of estimating flow pressure using flow rate of said gas instead of measuring gas pressure directly to the fuel cell system of Nissan because that is an alternative embodiment of said invention can be embodied without departing from the principle of the invention (see Morishima col 8, ln 57-61). Morishima discloses that control using pressure and drive amount of a gas (flow rate) are equivalents (col 8, ln 57-61).

Regarding claim 8, Kazuo discloses all the claim limitations as set forth above, but Kazuo does not expressly disclose wherein the anode side pressure detection means estimates and detects the pressure of the fuel gas on the basis of a drive amount of the fuel gas pump.

However, Morishima does teach a similar fuel cell system wherein the control unit estimates a gas pressure using a drive amount of said gas pump instead of measuring the pressure of said gas directly (col 8, ln 62-67 'may use a flow rate... as measured').

Kazuo and Morishima are combinable because they are concerned with the same field of endeavor, namely fuel cell systems and methods for fluid circulation therewithin.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add Morishima's teaching of estimating flow pressure using flow rate of said gas instead of measuring gas pressure directly to the fuel cell system of Nissan because that is an alternative embodiment of said invention can be embodied without departing from the principle of the invention (see Morishima col 8, ln 57-61). Morishima discloses that control using pressure and drive amount of a gas (flow rate) are equivalents (col 8, ln 57-61).

10. Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazuo (JP2002-352837) as applied to claims 1-3, 8, 10, 11 and 12 above, and further in view of Muehlherr et al. (US2003/0012991).

With respect to claims 9 and 12, Kazuo do not disclose using an oxidant to pressure regulate the flow to and from the fuel cell. Muehlherr et al. disclose a pressure regulator for a fuel cell system and a method of making a pressure regulator. Muehlherr et al. disclose a fuel cell system having a pressure regulator (1) for a fuel cell (2) having an anode (3) and cathode (4) side. Each has an inlet (3.2, 4.1) and an outlet (3.1, 4.2) for the reactants. A pressure regulator (1) includes a membrane (5) which separators the anode side (6) from the cathode side (7). See [0012]. The regulator can be used to set the same pressure on the anode side (3) as the cathode side (4) of the fuel cell unit

(2). See [0013]. As Kazuo discusses, the goal is to have the oxidant gas and the fuel gas with the same predetermined pressure. See [0084]. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a pressure regulator of the design as taught by Muehlherr et al. as a pressure regulator in the fuel cell system of Kazuo because the regulator can be used to set the same pressure on the anode side and the cathode side.

Double Patenting

11. The double patenting rejection has been withdrawn in light of the Terminal Disclaimer.

Response to Arguments

12. Applicant's arguments filed September 9, 2009 have been fully considered but they are not persuasive. Applicant argues:

a) The 112, first paragraph, rejection is improper.

The Examiner agrees, however as the claim has been amended it is the position of the Examiner that 112, first paragraph, is newly proper as discussed above.

b) The fuel gas feeder current is not connected upstream of a pressure-regulating means.

The Examiner respectfully disagrees. The pressure regulator (31) of Figure 8 is downstream from the pump, hence the limitation is met.

c) Kazuo does not disclose a fuel cell system having a control unit that outputs a control signal to a fuel gas pump.

The Examiner agrees, however the argument is moot in view of the new grounds of rejection necessitated by the amendment.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact/Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Scully whose telephone number is (571)270-5267. The examiner can normally be reached on Monday to Friday 7:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on (571)272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/S. S./
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795